

SEQUENCE LISTING

<110> Bayer CropScience GmbH

<120> Plant cells and plants which synthesize a starch with an increased final viscosity

<130> BCS 02 5002 - PCT

<150> EP 02028530.0

<151> 2002-12-19

<150> EP 03090275.3

<151> 2003-08-29

<160> 8

<170> PatentIn version 3.1

<210> 1

<211> 4167

<212> DNA

<213> Solanum tuberosum

<220>

<221> CDS

<222> (207) .. (3899)

<223>

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<301> Abel, G.J., Springer, F., Willmitzer, L. and Kossmann, J.

<302> Cloning and functional analysis of a cDNA encoding a novel
139 kDa

<303> Plant J.

<304> 10

<305> 6

<306> 981-991

<307> 1996

<308> X94400

<309> 1995-12-22

<313> (1)..(4167)

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<308> EMBL / X94400

<309> 1997-04-16

<313> (1)..(4167)

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Met Asp Val Pro Phe Pro Leu His Arg

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Pro Leu Ser Cys Thr Ser Val Ser Asn Ala Ile Thr His Leu Lys Ile

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377

Gln Ser Ser Ser Trp Arg Lys Asp Gly Met Val Thr Gly Val Ser Phe

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cca ttt tgt gca aat ctc tcg gga aga aga cgg aga aaa gtt tca act
425

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Thr Arg Ser Gln Gly Ser Ser Pro Lys Gly Phe Val Pro Arg Lys Pro

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tca ggg atg agc acg caa aga aag gtt cag aag agc aat ggt gat aaa
521

Ser Gly Met Ser Thr Gln Arg Lys Val Gln Lys Ser Asn Gly Asp Lys

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gaa agt caa agt act tca aca tct aaa gaa tct gaa att tcc aac cag
569

Glu Ser Gln Ser Thr Ser Thr Ser Lys Glu Ser Glu Ile Ser Asn Gln

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 Lys Thr Val Glu Ala Arg Val Glu Thr Ser Asp Asp Asp Thr Lys Val

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gtg gtg agg gac cac aag ttt ctg gag gat gag gat gaa atc aat ggt
 665
 Val Val Arg Asp His Lys Phe Leu Glu Asp Glu Asp Glu Ile Asn Gly

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 Ser Thr Lys Ser Ile Ser Met Ser Pro Val Arg Val Ser Ser Gln Phe

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 Ile Arg Glu Gln Ser Gly Ser Gln Gly Glu Thr Asn Ala Ser Ser Lys

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 Gly Ser His Ala Val Gly Thr Lys Leu Tyr Glu Ile Leu Gln Val Asp

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225

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gtt gag cca caa caa ttg aaa gaa aat aat gct ggg aat gtt gaa tac

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Val Glu Pro Gln Gln Leu Lys Glu Asn Asn Ala Gly Asn Val Glu Tyr

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aaa gga cct gta gca agt aag cta ttg gaa att act aag gct agt gat
1001

Lys Gly Pro Val Ala Ser Lys Leu Leu Glu Ile Thr Lys Ala Ser Asp

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260

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gtg gaa cac act gaa agc aat gag att gat gac tta gac act aat agt
1049

Val Glu His Thr Glu Ser Asn Glu Ile Asp Asp Leu Asp Thr Asn Ser

270

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ttc ttt aaa tca gat tta att gaa gag gat gag cca tta gct gca gga
1097

Phe Phe Lys Ser Asp Leu Ile Glu Glu Asp Glu Pro Leu Ala Ala Gly

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Thr Val Glu Thr Gly Asp Ser Ser Leu Asn Leu Arg Leu Glu Met Glu

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gca aat cta cgt agg cag gct ata gaa agg ctt gcc gag gaa aat tta
1193

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325

ttg caa ggg atc aga tta ttt tgt ttt cca gag gtt gta aaa cct gat
1241

Leu Gln Gly Ile Arg Leu Phe Cys Phe Pro Glu Val Val Lys Pro Asp

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340

345

gaa gat gtc gag ata ttt ctt aac aga ggt ctt tcc act ttg aag aat
1289

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Ser Phe Thr Thr Arg Leu Thr Glu Thr His Leu Asn Gly Asp Trp Trp		
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Ser Cys Lys Ile His Val Pro Lys Glu Ala Tyr Arg Ala Asp Phe Val		
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495

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1769

Arg Asp Ile Thr Trp Tyr Ile Glu Pro Ser Glu Phe Lys Cys Glu Asp

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515

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Lys Val Arg Leu Tyr Tyr Asn Lys Ser Ser Gly Pro Leu Ser His Ala

525

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1865

Lys Asp Leu Trp Ile His Gly Gly Tyr Asn Asn Trp Lys Asp Gly Leu

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Ser Ile Val Lys Lys Leu Val Lys Ser Glu Arg Ile Asp Gly Asp Trp

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1961

Trp Tyr Thr Glu Val Val Ile Pro Asp Gln Ala Leu Phe Leu Asp Trp

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580

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2009

Val Phe Ala Asp Gly Pro Pro Lys His Ala Ile Ala Tyr Asp Asn Asn

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His Arg Gln Asp Phe His Ala Ile Val Pro Asn His Ile Pro Glu Glu
605 610 615
tta tat tgg gtt gag gaa gaa cat cag atc ttt aag aca ctt cag gag
2105
Leu Tyr Trp Val Glu Glu Glu His Gln Ile Phe Lys Thr Leu Gln Glu
620 625 630
gag aga agg ctt aga gaa gcg gct atg cgt gct aag gtt gaa aaa aca
2153
Glu Arg Arg Leu Arg Glu Ala Ala Met Arg Ala Lys Val Glu Lys Thr
635 640 645
gca ctt ctg aaa act gaa aca aag gaa aga act atg aaa tca ttt tta
2201
Ala Leu Leu Lys Thr Glu Thr Lys Glu Arg Thr Met Lys Ser Phe Leu
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2249
Leu Ser Gln Lys His Val Val Tyr Thr Glu Pro Leu Asp Ile Gln Ala
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2297
Gly Ser Ser Val Thr Val Tyr Tyr Asn Pro Ala Asn Thr Val Leu Asn
685 690 695
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Gly Lys Pro Glu Ile Trp Phe Arg Cys Ser Phe Asn Arg Trp Thr His
700 705 710

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acc cat gtc aga gca act gtg aag gtt cca ttg gat gca tat atg atg
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Thr His Val Arg Ala Thr Val Lys Val Pro Leu Asp Ala Tyr Met Met

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740

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2489

Asp Phe Val Phe Ser Glu Arg Glu Asp Gly Gly Ile Phe Asp Asn Lys

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755

760

agc gga atg gac tat cac ata cct gtg ttt gga gga gtc gct aaa gaa
2537

Ser Gly Met Asp Tyr His Ile Pro Val Phe Gly Gly Val Ala Lys Glu

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770

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cct cca atg cat att gtc cat att gct gtc gaa atg gca cca att gca
2585

Pro Pro Met His Ile Val His Ile Ala Val Glu Met Ala Pro Ile Ala

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785

790

aag gtg gga ggc ctt ggt gat gtt gtt act agt ctt tcc cgt gct gtt
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Lys Val Gly Gly Leu Gly Asp Val Val Thr Ser Leu Ser Arg Ala Val

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caa gat tta aac cat aat gtg gat att atc tta cct aag tat gac tgt
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Gln Asp Leu Asn His Asn Val Asp Ile Ile Leu Pro Lys Tyr Asp Cys

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815

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ttg aag atg aat aat gtg aag gac ttt cgg ttt cac aaa aac tac ttt
2729

Leu Lys Met Asn Asn Val Lys Asp Phe Arg Phe His Lys Asn Tyr Phe
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 Trp Gly Gly Thr Glu Ile Lys Val Trp Phe Gly Lys Val Glu Gly Leu
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 Ser Val Tyr Phe Leu Glu Pro Gln Asn Gly Leu Phe Ser Lys Gly Cys
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gtc tat ggt tgt agc aat gat ggt gaa cga ttt ggt ttc ttc tgt cac
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 Val Tyr Gly Cys Ser Asn Asp Gly Glu Arg Phe Gly Phe Phe Cys His
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gcg gct ttg gag ttt ctt ctg caa ggt gga ttt agt ccg gat atc att
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 Ala Ala Leu Glu Phe Leu Leu Gln Gly Gly Phe Ser Pro Asp Ile Ile
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cat tgc cat gat tgg tct agt gct cct gtt gct tgg ctc ttt aag gaa
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 His Cys His Asp Trp Ser Ser Ala Pro Val Ala Trp Leu Phe Lys Glu
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caa tat aca cac tat ggt cta agc aaa tct cgt ata gtc ttc acg ata
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 Gln Tyr Thr His Tyr Gly Leu Ser Lys Ser Arg Ile Val Phe Thr Ile
 925 930 935

cat aat ctt gaa ttt ggg gca gat ctc att ggg aga gca atg act aac
 3065
 His Asn Leu Glu Phe Gly Ala Asp Leu Ile Gly Arg Ala Met Thr Asn
 940 945 950

gca gac aaa gct aca aca gtt tca cca act tac tca cag gag gtg tct
3113

Ala Asp Lys Ala Thr Thr Val Ser Pro Thr Tyr Ser Gln Glu Val Ser

955

960

965

gga aac cct gta att gcg cct cac ctt cac aag ttc cat ggt ata gtg
3161

Gly Asn Pro Val Ile Ala Pro His Leu His Lys Phe His Gly Ile Val

970

975

980

985

aat ggg att gac cca gat att tgg gat cct tta aac gat aag ttc att
3209

Asn Gly Ile Asp Pro Asp Ile Trp Asp Pro Leu Asn Asp Lys Phe Ile

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ccg att ccg tac acc tca gaa aac gtt gtt gaa ggc aaa aca gca
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Pro Ile Pro Tyr Thr Ser Glu Asn Val Val Glu Gly Lys Thr Ala

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Ala Lys Glu Ala Leu Gln Arg Lys Leu Gly Leu Lys Gln Ala Asp

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ctt cct ttg gta gga att atc acc cgc tta act cac cag aaa gga
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Leu Pro Leu Val Gly Ile Ile Thr Arg Leu Thr His Gln Lys Gly

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1040

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3389

Ile His Leu Ile Lys His Ala Ile Trp Arg Thr Leu Glu Arg Asn

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 Asn Asp Phe Val Asn Leu Ala Asn Gln Leu His Ser Lys Tyr Asn
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 Ile Pro Val Val Arg Lys Thr Gly Gly Leu Tyr Asp Thr Val Phe
 1140 1145 1150

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 Asp Val Asp His Asp Lys Glu Arg Ala Gln Gln Cys Gly Leu Glu
 1155 1160 1165

 cca aat gga ttc agc ttt gat gga gca gat gct ggc gga gtt gat
 3749
 Pro Asn Gly Phe Ser Phe Asp Gly Ala Asp Ala Gly Gly Val Asp

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1175

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3794

Tyr Ala Leu Asn Arg Ala Leu Ser Ala Trp Tyr Asp Gly Arg Asp

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1190

1195

tgg ttc aac tct tta tgc aag cag gtc atg gaa caa gat tgg tct
3839

Trp Phe Asn Ser Leu Cys Lys Gln Val Met Glu Gln Asp Trp Ser

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1205

1210

tgg aac cga cct gct ctt gat tat ttg gag ctt tac cat gct gct
3884

Trp Asn Arg Pro Ala Leu Asp Tyr Leu Glu Leu Tyr His Ala Ala

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Arg Lys Leu Glu

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4167

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<211> 1230

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<213> Solanum tuberosum

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 35 40 45

Asp Gly Met Val Thr Gly Val Ser Phe Pro Phe Cys Ala Asn Leu Ser
 50 55 60

Gly Arg Arg Arg Arg Lys Val Ser Thr Thr Arg Ser Gln Gly Ser Ser
 65 70 75 80

Pro Lys Gly Phe Val Pro Arg Lys Pro Ser Gly Met Ser Thr Gln Arg
 85 90 95

Lys Val Gln Lys Ser Asn Gly Asp Lys Glu Ser Gln Ser Thr Ser Thr
 100 105 110

Ser Lys Glu Ser Glu Ile Ser Asn Gln Lys Thr Val Glu Ala Arg Val
 115 120 125

Glu Thr Ser Asp Asp Asp Thr Lys Val Val Val Arg Asp His Lys Phe
 130 135 140

Leu Glu Asp Glu Asp Glu Ile Asn Gly Ser Thr Lys Ser Ile Ser Met
 145 150 155 160

Ser Pro Val Arg Val Ser Ser Gln Phe Val Glu Ser Glu Glu Thr Gly
 165 170 175

Gly Asp Asp Lys Asp Ala Val Lys Leu Asn Lys Ser Lys Arg Ser Glu
 180 185 190

Glu Ser Asp Phe Leu Ile Asp Ser Val Ile Arg Glu Gln Ser Gly Ser
 195 200 205

Gln Gly Glu Thr Asn Ala Ser Ser Lys Gly Ser His Ala Val Gly Thr
 210 215 220

Lys Leu Tyr Glu Ile Leu Gln Val Asp Val Glu Pro Gln Gln Leu Lys
 225 230 235 240

Glu Asn Asn Ala Gly Asn Val Glu Tyr Lys Gly Pro Val Ala Ser Lys
 245 250 255

Leu Leu Glu Ile Thr Lys Ala Ser Asp Val Glu His Thr Glu Ser Asn
 260 265 270

Glu Ile Asp Asp Leu Asp Thr Asn Ser Phe Phe Lys Ser Asp Leu Ile
 275 280 285

Glu Glu Asp Glu Pro Leu Ala Ala Gly Thr Val Glu Thr Gly Asp Ser
 290 295 300

Ser Leu Asn Leu Arg Leu Glu Met Glu Ala Asn Leu Arg Arg Gln Ala
 305 310 315 320

Ile Glu Arg Leu Ala Glu Glu Asn Leu Leu Gln Gly Ile Arg Leu Phe
 325 330 335

Cys Phe Pro Glu Val Val Lys Pro Asp Glu Asp Val Glu Ile Phe Leu
 340 345 350

Asn Arg Gly Leu Ser Thr Leu Lys Asn Glu Ser Asp Val Leu Ile Met
 355 360 365

Gly Ala Phe Asn Glu Trp Arg Tyr Arg Ser Phe Thr Thr Arg Leu Thr
 370 375 380

Glu Thr His Leu Asn Gly Asp Trp Trp Ser Cys Lys Ile His Val Pro
 385 390 395 400

Lys Glu Ala Tyr Arg Ala Asp Phe Val Phe Phe Asn Gly Gln Asp Val
 405 410 415

Tyr Asp Asn Asn Asp Gly Asn Asp Phe Ser Ile Thr Val Lys Gly Gly
 420 425 430

Met Gln Ile Ile Asp Phe Glu Asn Phe Leu Leu Glu Glu Lys Trp Arg
 435 440 445

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 450 455 460

Glu Glu Gln Arg Arg Ile Glu Ala Glu Lys Ala Glu Ile Glu Ala Asp
 465 470 475 480

Arg Ala Gln Ala Lys Glu Glu Ala Ala Lys Lys Lys Lys Val Leu Arg
 485 490 495

Glu Leu Met Val Lys Ala Thr Lys Thr Arg Asp Ile Thr Trp Tyr Ile
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Glu Pro Ser Glu Phe Lys Cys Glu Asp Lys Val Arg Leu Tyr Tyr Asn
 515 520 525

Lys Ser Ser Gly Pro Leu Ser His Ala Lys Asp Leu Trp Ile His Gly
 530 535 540

Gly Tyr Asn Asn Trp Lys Asp Gly Leu Ser Ile Val Lys Lys Leu Val
 545 550 555 560

Lys Ser Glu Arg Ile Asp Gly Asp Trp Trp Tyr Thr Glu Val Val Ile
 565 570 575

Pro Asp Gln Ala Leu Phe Leu Asp Trp Val Phe Ala Asp Gly Pro Pro
 580 585 590

Lys His Ala Ile Ala Tyr Asp Asn Asn His Arg Gln Asp Phe His Ala
 595 600 605

Ile Val Pro Asn His Ile Pro Glu Glu Leu Tyr Trp Val Glu Glu Glu
 610 615 620

His Gln Ile Phe Lys Thr Leu Gln Glu Glu Arg Arg Leu Arg Glu Ala
 625 630 635 640

Ala Met Arg Ala Lys Val Glu Lys Thr Ala Leu Leu Lys Thr Glu Thr
 645 650 655

Lys Glu Arg Thr Met Lys Ser Phe Leu Leu Ser Gln Lys His Val Val
 660 665 670

Tyr Thr Glu Pro Leu Asp Ile Gln Ala Gly Ser Ser Val Thr Val Tyr
 675 680 685

Tyr Asn Pro Ala Asn Thr Val Leu Asn Gly Lys Pro Glu Ile Trp Phe
 690 695 700

Arg Cys Ser Phe Asn Arg Trp Thr His Arg Leu Gly Pro Leu Pro Pro
 705 710 715 720

Gln Lys Met Ser Pro Ala Glu Asn Gly Thr His Val Arg Ala Thr Val
 725 730 735

Lys Val Pro Leu Asp Ala Tyr Met Met Asp Phe Val Phe Ser Glu Arg
 740 745 750

Glu Asp Gly Gly Ile Phe Asp Asn Lys Ser Gly Met Asp Tyr His Ile
 755 760 765

Pro Val Phe Gly Gly Val Ala Lys Glu Pro Pro Met His Ile Val His
 770 775 780

Ile Ala Val Glu Met Ala Pro Ile Ala Lys Val Gly Gly Leu Gly Asp
 785 790 795 800

Val Val Thr Ser Leu Ser Arg Ala Val Gln Asp Leu Asn His Asn Val
 805 810 815

Asp Ile Ile Leu Pro Lys Tyr Asp Cys Leu Lys Met Asn Asn Val Lys
820 825 830

Asp Phe Arg Phe His Lys Asn Tyr Phe Trp Gly Gly Thr Glu Ile Lys
835 840 845

Val Trp Phe Gly Lys Val Glu Gly Leu Ser Val Tyr Phe Leu Glu Pro
850 855 860

Gln Asn Gly Leu Phe Ser Lys Gly Cys Val Tyr Gly Cys Ser Asn Asp
865 870 875 880

Gly Glu Arg Phe Gly Phe Phe Cys His Ala Ala Leu Glu Phe Leu Leu
885 890 895

Gln Gly Gly Phe Ser Pro Asp Ile Ile His Cys His Asp Trp Ser Ser
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Ala Pro Val Ala Trp Leu Phe Lys Glu Gln Tyr Thr His Tyr Gly Leu
915 920 925

Ser Lys Ser Arg Ile Val Phe Thr Ile His Asn Leu Glu Phe Gly Ala
930 935 940

Asp Leu Ile Gly Arg Ala Met Thr Asn Ala Asp Lys Ala Thr Thr Val
945 950 955 960

Ser Pro Thr Tyr Ser Gln Glu Val Ser Gly Asn Pro Val Ile Ala Pro
965 970 975

His Leu His Lys Phe His Gly Ile Val Asn Gly Ile Asp Pro Asp Ile
980 985 990

Trp Asp Pro Leu Asn Asp Lys Phe Ile Pro Ile Pro Tyr Thr Ser Glu
995 1000 1005

Asn Val Val Glu Gly Lys Thr Ala Ala Lys Glu Ala Leu Gln Arg
1010 1015 1020

Lys	Leu	Gly	Leu	Lys	Gln	Ala	Asp	Leu	Pro	Leu	Val	Gly	Ile	Ile
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1040						1045					1050			
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Ser	Ala	Pro	Asp	Pro	Arg	Val	Gln	Asn	Asp	Phe	Val	Asn	Leu	Ala
1070						1075					1080			
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1085						1090					1095			
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1100						1105					1110			
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Gly	Ala	Asp	Ala	Gly	Gly	Val	Asp	Tyr	Ala	Leu	Asn	Arg	Ala	Leu
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Ser	Ala	Trp	Tyr	Asp	Gly	Arg	Asp	Trp	Phe	Asn	Ser	Leu	Cys	Lys
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Gln	Val	Met	Glu	Gln	Asp	Trp	Ser	Trp	Asn	Arg	Pro	Ala	Leu	Asp
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Tyr Leu Glu Leu Tyr His Ala Ala Arg Lys Leu Glu
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<213> Solanum tuberosum

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<213> Solanum tuberosum

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<308> Swiss Prot / P30924

<309> 1993-07-26

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Leu Asn Leu Asp Pro Thr Leu Glu Pro Tyr Leu Asp His Phe Arg His
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Arg Met Lys Arg Tyr Val Asp Gln Lys Met Leu Ile Glu Lys Tyr Glu
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Gly Pro Leu Glu Glu Phe Ala Gln Gly Tyr Leu Lys Phe Gly Phe Asn
 65 70 75 80

Arg Glu Asp Gly Cys Ile Val Tyr Arg Glu Trp Ala Pro Ala Ala Gln
 85 90 95

Glu Ala Glu Val Ile Gly Asp Phe Asn Gly Arg Asn Gly Ser Asn His
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Met Met Glu Lys Asp Gln Phe Gly Val Trp Ser Ile Arg Ile Pro Asp
 115 120 125

Val Asp Ser Lys Pro Val Ile Pro His Asn Ser Arg Val Lys Phe Arg
 130 135 140

Phe Lys His Gly Asn Gly Val Trp Val Asp Arg Ile Pro Ala Trp Ile
 145 150 155 160

Lys Tyr Ala Thr Ala Asp Ala Thr Lys Phe Ala Ala Pro Tyr Asp Gly
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Val Tyr Trp Asp Pro Pro Pro Ser Glu Arg Tyr His Phe Lys Tyr Pro
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Arg Pro Pro Lys Pro Arg Ala Pro Arg Ile Tyr Glu Ala His Val Gly
 195 200 205

Met Ser Ser Ser Glu Pro Arg Val Asn Ser Tyr Arg Glu Phe Ala Asp
 210 215 220

Asp Val Leu Pro Arg Ile Lys Ala Asn Asn Tyr Asn Thr Val Gln Leu
 225 230 235 240

Met Ala Ile Met Glu His Ser Tyr Tyr Gly Ser Phe Gly Tyr His Val
245 250 255

Thr Asn Phe Phe Ala Val Ser Asn Arg Tyr Gly Asn Pro Glu Asp Leu
260 265 270

Lys Tyr Leu Ile Asp Lys Ala His Ser Leu Gly Leu Gln Val Leu Val
275 280 285

Asp Val Val His Ser His Ala Ser Asn Asn Val Thr Asp Gly Leu Asn
290 295 300

Gly Phe Asp Ile Gly Gln Gly Ser Gln Glu Ser Tyr Phe His Ala Gly
305 310 315 320

Glu Arg Gly Tyr His Lys Leu Trp Asp Ser Arg Leu Phe Asn Tyr Ala
325 330 335

Asn Trp Glu Val Leu Arg Phe Leu Leu Ser Asn Leu Arg Trp Trp Leu
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Glu Glu Tyr Asn Phe Asp Gly Phe Arg Phe Asp Gly Ile Thr Ser Met
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Leu Tyr Val His His Gly Ile Asn Met Gly Phe Thr Gly Asn Tyr Asn
370 375 380

Glu Tyr Phe Ser Glu Ala Thr Asp Val Asp Ala Val Val Tyr Leu Met
385 390 395 400

Leu Ala Asn Asn Leu Ile His Lys Ile Phe Pro Asp Ala Thr Val Ile
405 410 415

Ala Glu Asp Val Ser Gly Met Pro Gly Leu Ser Arg Pro Val Ser Glu
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Gly Gly Ile Gly Phe Asp Tyr Arg Leu Ala Met Ala Ile Pro Asp Lys
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Trp Ile Asp Tyr Leu Lys Asn Lys Asn Asp Glu Asp Trp Ser Met Lys
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Glu Val Thr Ser Ser Leu Thr Asn Arg Arg Tyr Thr Glu Lys Cys Ile
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Ala Tyr Ala Glu Ser His Asp Gln Ser Ile Val Gly Asp Lys Thr Ile
 485 490 495

Ala Phe Leu Leu Met Asn Lys Glu Met Tyr Ser Gly Met Ser Cys Leu
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Thr Asp Ala Ser Pro Val Val Asp Ala Gly Ile Ala Leu Asp Lys Met
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His Gly
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<211> 2649

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<213> Solanum tuberosum

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<309> 1999-04-07

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<302> Improvements in or relating to plant starch composition

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<309> 1998-03-05

<310> WO 96 34968

<311> 1996-05-03

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 35 40 45

Glu Lys Ser Ser Tyr Asn Ser Glu Phe Arg Pro Ser Thr Val Ala Ala
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Ser Gly Lys Val Leu Val Pro Gly Thr Gln Ser Asp Ser Ser Ser Ser
 65 70 75 80

Ser Thr Asp Gln Phe Glu Phe Thr Glu Thr Ser Pro Glu Asn Ser Pro
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Ala Ser Thr Asp Val Asp Ser Ser Thr Met Glu His Ala Ser Gln Ile
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Lys Thr Glu Asn Asp Asp Val Glu Pro Ser Ser Asp Leu Thr Gly Ser
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Val Glu Glu Leu Asp Phe Ala Ser Ser Leu Gln Leu Gln Glu Gly Gly
 130 135 140

Lys Leu Glu Glu Ser Lys Thr Leu Asn Thr Ser Glu Glu Thr Ile Ile
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Asp Glu Ser Asp Arg Ile Arg Glu Arg Gly Ile Pro Pro Pro Gly Leu
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Gly Gln Lys Ile Tyr Glu Ile Asp Pro Leu Leu Thr Asn Tyr Arg Gln
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His Leu Asp Tyr Arg Tyr Ser Gln Tyr Lys Lys Leu Arg Glu Ala Ile

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His	Pro	Arg	Pro	Lys	Lys	Pro	Lys	Ser	Leu	Arg	Ile	Tyr	Glu	Ser	His
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Ile	Glu	Leu	Leu	Lys	Lys	Arg	Asp	Glu	Asp	Trp	Arg	Val	Gly	Asp	Ile
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610

615

620

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Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro Arg Ala Glu Gln
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Lys Cys Arg Arg Arg Phe Asp Leu Gly Asp Ala Glu Tyr Leu Arg Tyr
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Tyr Glu Phe Met Thr Ser Glu His Gln Phe Ile Ser Arg Lys Asp Glu
755 760 765

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770 775 780

Asn Phe His Trp Thr Lys Ser Tyr Ser Asp Tyr Arg Ile Ala Cys Leu
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Lys Pro Gly Lys Tyr Pro Val Ala Leu Asp Ser Asp Asp Pro Leu Phe
805 810 815

Gly Gly Phe Gly Arg Ile Asp His Asn Ala Glu Tyr Phe Thr Phe Glu

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Lys	Thr	Ala	Val	Val	Tyr	Ala	Leu	Val	Asp	Lys	Glu	Glu	Glu	Glu	Glu
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<211> 1255

<212> DNA

<213> Solanum tuberosum

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